Appl. No. 09/579,371
Amdt. Dated 02/03/2004
Reply to Office Action of 10/04/2003

APP 1211

Listing of Claims:

Claim 1 (currently amended): A method for measuring network performance, <u>said method</u> comprising <u>the steps of</u> :

 dividing packets flowing through a first point into frames, the first point being any point in the network that supports a packet flow;

 capturing information about the packets in packages that correspond to the frames;

 correlating each package with packets flowing through a second point, the second point being any <u>other</u> point in the network that supports the packet flow; and

 calculating network performance information based on the correlated packages.

Claim 2 (original): The method of claim 1, wherein the dividing step comprises:

 selecting a header associated with the packets flowing through the first point;

 associating the header with the packet flow; and

 storing the header in a storage associated with the packet flow.

Claim 3 (currently amended): ~~The~~ <u>A</u> method ~~of claim 2~~ <u>for measuring network performance, comprising the steps of:</u>

 <u>dividing packets flowing through a first point into frames, the first point being any point in the network that supports a packet flow, said dividing step comprising</u>

  <u>selecting a header associated with the packets flowing through the first point;</u>

  <u>associating the header with the packet flow;</u>

  <u>storing the header in a storage associated with the packet flow;</u>

  incrementing a packet count; and

  detecting duplicate packets;

Appl. No. 09/579,371
Amdt. Dated 02/03/2004
Reply to Office Action of 10/04/2003

APP 1211

capturing information about the packets in packages that correspond to the frames;

correlating each package with packets flowing through a second point, the second point being any other point in the network that supports the packet flow; and

calculating network performance information based on the correlated packages.

Claim 4 (original): The method of claim 3, wherein the detecting step comprises searching in the storage for another header that matches the selected header.

Claim 5 (original): The method of claim 3, wherein a duplicate packet count is incremented when a duplicate packet is detected.

Claim 6 (original): The method of claim 2, wherein the storing step is repeated to form a sequence of headers in the storage.

Claim 7 (original): The method of claim 6, wherein the step of storing the header further comprises:

storing header order of capture information in a second storage associated with the selected header.

Claim 8 (original): The method of claim 6, herein the headers in the storage are stored in the form of a hash table data structure.

Claim 9 (cancelled).

Claim 10 (currently amended): The ~~A~~ method ~~of claim 1,~~ for measuring network performance, comprising:

dividing packets flowing through a first point into frames, the first point being any point in the network that supports a packet flow;

capturing information about the packet in packages that correspond to the frames;

correlating each package with packets flowing through a second point, the second point being any point in the network that supports the packet flow; and

calculating network performance information based on the correlated packages; and

wherein the step of capturing information comprises retrieving consecutive headers from a frame; and forming a package including information that uniquely identifies consecutive packets corresponding to the consecutive headers.

Appl. No. 09/579,371
Amdt. Dated 02/03/2004
Reply to Office Action of 10/04/2003

APP 1211

Claim 11 (original): The method of claim 10, wherein the step of forming a package further comprises:

setting the package size to represent the number of packets in the package.

Claim 12 (currently amended): The method of claim 10, wherein the step of forming a package further comprises:

selecting a source information, a destination information, an Internet Protocol identifier, a fragment flag, and a fragment offset from each packet in the package as the information that uniquely identifies consecutive packets corresponding to the consecutive headers.

Claim 13 (original): The method of claim 10, wherein the step of retrieving consecutive headers further comprises:

assigning a time stamp and locally-generated sequence number to each of the consecutive headers.

Claim 14 (original): The method of claim 10, wherein the step of retrieving consecutive headers further comprises:

retrieving last n headers in the frame, n being an integer number.

Claim 15 (original): The method of claim 1, further comprising:

storing in a storage a header associated with the packets flowing through the second point.

Claim 16 (original): The method of claim 15, wherein the step of storing the header further comprises:

selecting the header;

associating the header with the packet flow; and

storing the header in a storage location associated with the packet flow.

Claim 17 (currently amended): ~~The~~ A method ~~of claim 16,~~ for measuring network performance, comprising:

dividing packets flowing through a first point into frames, the first point being any point in the network that supports a packet flow;

Appl. No. 09/579,371
Amdt. Dated 02/03/2004
Reply to Office Action of 10/04/2003

APP 1211

capturing information about the packets in packages that correspond to the frames;

correlating each package with packets flowing through a second point, the second point being any point in the network that supports the packet flow;

storing in a storage a header associated with the packets flowing through the second point, said storing step comprising selecting the header, associating the header with the packet flow, storing the header in a storage location associated with the packet flow, ~~wherein the step of storing the head further comprises:~~ incrementing a packet count; and detecting duplicate packets; and

calculating network performance information based on the correlated packets.

Claim 18 (original): The method of claim 17, wherein the detecting step comprises:

searching in the storage for another that matches the selected header.

Claim 19 (original): The method of claim 17, wherein a duplicate packet count is incremented when a duplicate packet is detected.

Claim 20 (original): The method of claim 15, wherein the step of storing the header in a storage location is repeated to form a sequence of headers in the storage and further comprises:

storing header order of capture information in a second storage, the second storage being associated with the selected header.

Claim 21 (currently amended): ~~The~~ A method ~~of claim 1, wherein~~ for measuring network performance, comprising:

dividing packets flowing through a first point into frames, the first point being any point in the network that supports a packet flow;

capturing information about the packets in packages that correspond to the frames;

correlating each package with packets flowing through a second point, the second point being any point in the network that supports the packet flow, the correlating step ~~comprises~~ comprising associating each package with the packet flow; searching for a match between packet information selected in each packet and stored header information corresponding to the packet flow; and calculating a destination frame size ; and

calculating network performance information based on the correlated packages .

Appl. No. 09/579,371
Amdt. Dated 02/03/2004
Reply to Office Action of 10/04/2003

APP 1211

Claim 22 (original): The method of claim 21, wherein the step of calculating a destination frame comprises:

determining a number of packets in between a match of a previous package and a match of a present package.

Claim 23 (original): The method of claim 21, wherein the searching step comprises examining a number of stored packet headers in the storage.

Claim 24 (original): The method of claim 1, wherein the step of calculating network performance comprises:

determining a number of packets lost between the first point and the second point in the network.

Claim 25 (currently amended): ~~The~~ A method ~~of claim 24, wherein~~ for measuring network performance, comprising:

dividing packets flowing through a first point into frames, the first point being any point in the network that supports a packet flow;

capturing information about the packets in packages that correspond to the frames;

correlating each package with packets flowing through a second point, the second point being any point in the network that supports the packet flow; and

calculating network performance information based on the correlated packages, the step of calculating comprising determining a number of packets lost between the first point and the second point in the network, the step of determining the number of packets lost ~~comprises~~ comprising:

determining a source frame size from a correlated package;

calculating a destination frame size;

subtracting the destination frame size from the source frame size; and

adding a number of duplicate packets generated between the first point and second point in the network to the subtraction of the destination frame size from the source frame size.

Claim 26 (original): The method of claim 1, wherein the step of calculating network performance comprises:

Appl. No. 09/579,371
Amdt. Dated 02/03/2004
Reply to Office Action of 10/04/2003

APP 1211

determining a delay experienced by a packet flowing from the first point to the second point in the network.

Claim 27 (original): The method of claim 26, wherein the step of determining the delay comprises:

determining a first time at which a packet associated with a correlated package flows through the first point in the network;

determining a second time at which the packet flows through the second point in the network; and

subtracting the first time from the second time.

Claim 28 (currently amended): ~~The~~ A_method ~~of claim 1, wherein~~ for measuring network performance, comprising:

dividing packets flowing through a first point into frames, the first point being any point in the network that supports a packet flow;

capturing information about the packets in packages that correspond to the frames;

correlating each package with packets flowing through a second point , the second point being any point in the network that supports the packet flow; and

calculating network performance information based on the correlated packages, the step of calculating network performance ~~comprises:~~ comprising calculating a number of duplicate packets created between the first point and the second point.

Claim 29 (original): The method of claim 28, wherein the step of calculating the number of packet duplicates comprises:

counting duplicate packets at the first point;

counting duplicate packets at the second point; and

subtracting the count of duplicate packets at the first point from the count of duplicate packets at the second point.

Claim 30 (currently amended): A method for measuring network performance, said method comprising the steps of:

Appl. No. 09/579,371
Amdt. Dated 02/03/2004
Reply to Office Action of 10/04/2003

APP 1211

retrieving packet headers from a first class of packets at a first point in the network, the first point being any point in the network that supports a flow of either the first class of packets or a second class of packets carrying information corresponding to the packets of the first class;

selecting packet headers retrieved at the first point that correspond to a packet flow;

maintaining a first header store to store the selected headers as the first class of packets flow through the first point;

retrieving packet headers from the first class of packets at ~~the~~ a second point in the network, the second point being any other point in the network that also supports ~~a~~ the flow of either the first class of packets or the second class of packets;

selecting packet headers retrieved at the second point that correspond to the packet flow;

maintaining a second header storage to store the selected headers as the first class of packets flow through the second point;

creating a package of information from the first header storage;

sending the package to a monitor associated with the retrieval of packet headers at the second point;

correlating the package with information from the second header storage; and

calculating network performance information using a result of the correlation.

Claim 31 (currently amended): A system for measuring network performance comprising:

at least a first and a second monitoring device for monitoring packets associated with a plurality of packet flows and connected to any point in the network; and

at least a first and a second processing device for determining network performance information, each processing device being respectively connected to each of the first and second monitoring devices ; and

wherein the first processing device comprises a source device that divides packets accessed via the first monitoring device into frames and captures information about the packets in packages corresponding to frames; and the second processing device comprises a destination device that correlates each package with packets accessed via the second monitoring device and that calculates the network performance information based

Appl. No. 09/579,371
Amdt. Dated 02/03/2004
Reply to Office Action of 10/04/2003

APP 1211

on the correlated packages, wherein the monitoring devices monitor a packet flow from the plurality of packet flows.

Claim 32 (cancelled).

Claim 33 (currently amended): The system of claim 32 31, wherein the source device includes a processor for selecting a header associated with the packets accessed via the first monitoring devoice, for associating the header with the packet flow, and for storing the header in a storage.

Claim 34 (currently amended): The system of claim 32 31, wherein the captured information about the packets comprises:

source information;

destination information ;

an internet Protocol identifier;

a fragment offset; and

a fragment flag.

Claim 35 (currently amended): The system of claim 32 31, wherein the packages include running duplicate packet count, locally generated sequence number, and locally-generated time stamp information for each packet in the package.

Claim 36 (currently amended): The system of claim 32 31, wherein the packages include a packet flow identifier, a frame number, and a package size.

Claim 37 (cancelled).

Claim 38 (original): A method for measuring performance in a network, said method comprising the steps of:

dividing packets flowing through a first point into frames, the first point being any point in the network that supports a packet flow;

receiving information about the packets and the frames;

correlating the received information with packets flowing through a second point, the second point being any point in the network that supports a packet flow; and

calculating the performance of the network based on the correlated information.

Appl. No. 09/579,371
Amdt. Dated 02/03/2004
Reply to Office Action of 10/04/2003

APP 1211

Claim 39 (original): The method of claim 38 wherein the step of receiving information comprises:

receiving packages that correspond to the frames and include information about the packets and the frames.

Claim 40 (currently amended): A method for measuring the performance of a network, said method comprising the steps of:

dividing packets flowing through a first point into frames, the first point being any point in the network that supports a packet flow; and

capturing information about the packets and frames, such that the information is correlated with packets flowing through a second point in the network that supports packet flow, the step of capturing information comprising capturing information about the packets in packages that correspond to the frames.

Claim 41 (cancelled).